REPORT ON MARGUERITE CREEK SALMON SPAWNING GROUND STUDY

Description

Marguerite Creek drains a watershed of 20 square miles behind Marguerite Bay on Revilla Island. It is ringed by muskeg and bare ridges of 2,000 to 3,500 feet. Many snowfields stay till late summer or fall. The valley was probably formed by glaciers, but earth movement and stream cutting have changed its appearance. Thin soils on the upper slopes are covered with scrub or low volume timber. The lower slopes of colluvial soils are mostly good timber sites. Slide areas usually do not extend far into the colluvial soils.

Three steep, swift streams join at the 500 foot level near the back end of the valley to form the main creek, which flows through a small outwashed pocket and then down over bedrock in a narrow stretch of cascades. It emerges into a quarter mile wide bottom of outwash sand and gravel, which gradually flattens and evens out with Marguerite Lake at the lower end. Below the lake the stream flows over gravel for a short stretch, then falls down a cascade and over a barrier falls. Then it runs in a gully through the rolling valley bottom. South Marguerite Creek drains the southwest reach of the watershed and joins the main creek near the tidal flat.

According to the U.S. Fish and Wildlife Service stream catalog, there is 0.4 miles of intertidal spawning, and 0.7 miles of upstream spawning to the barrier falls. The south branch also has an undetermined length of spawning area. The stream is in the warm temperature range. An average escapement of over 10,000 pink and chum salmon is reported, the runs being mostly in late September through October.

Coho salmon are a minor species in the creek. Dolly Varden trout are in the stream below the falls and resident rainbows and cutthroat live in the lake and upper stream.

The streams between the lower falls and lake, and between the lake and upper cascades are possible spawning grounds, if opened to salmon.

Recent History

Since 1960, Davidson Logging Company has been high lead logging and trucking in Marguerite Valley. About 1,500 acres (most of the lower slopes and valley floor) has been logged and about 12 miles of road have been built. A possible 200 acres remains to be logged, probably in the next two years.

Sheet and gully erosion on the logged off ground does not seem to be an important source of siltation. The spur roads have been put to bed and erosion on them is being effectively stopped. There have been no major slides or slippages in the cutover.

of the channel were taken. The edge of permanent vegetation was arbitrarily chosen as the boundary at the normal high flow channel. Recorded were: Texture class of each bank, texture classes and widths of the dry stream bottom, and texture classes and widths under water at low flow. These rough texture classes were used: Rock - bed rock or loose rock over 1 foot across covering half or more of the surface
Gravel-Apparently suitable spawning gravel
Sand -pure sand, or gravel with half or more of the surface showing as sand
Mud - very fine sand, silt, or mud
71 crosssections were taken in 2-1/4 miles of stream. Bank vegetation, stream gradient, and appearance of pools and riffles was also noted. These were all eyeball measurements.

3. The centerline was also drawn on a larger map at a scale of 1" = 200'. The cross sections were located on this line and plotted. Then the cross sections were connected to produce a working map for sampling point location, area measurements, and to give an overall picture of the stream pattern.

4. The area under study was divided into 4 stretches of similar alignment, gradient, texture class distribution, and general appearance. Sampling points were located every 900 feet in stretches 3 and 4, and every 450 feet in stretch 2 because of its greater variety, and two were equally spaced within the gravel area of stretch 1. These points were placed on gravel bottoms in the middle of the low flow stream.

5. Gravel samples were taken as close to planned points as possible. This work was done at two low flow periods, one in early December, 1963, and one in early February, 1964. Samples were carried to the nearest logging road and hauled to the F.S. cabin at Marguerite Bay to be analyzed. The analyses are attached in the appendix.

6. The area of gravel bottom covered by low flows (useful gravel) was planimetered for each stretch to get a square foot figure.

7. The percent of sample volumes less than .033 MM (percent of fines) was plotted against the distance up the center line between the sample point and the lake. A curve was fitted to these points for the upper stretches and for the lower stretch. Using 15% as the upper limit of fines in good spawning gravel, the percent of the length of each stretch which, according to the idealized curve, had good spawning gravel, was measured. This percentage of the total useful gravel area was calculated for each stretch, regardless of stream shape and pattern within the stretch. The graph is attached in the appendix.

Results

The study indicates that at least part of each stretch that would be opened to salmon by a pass over the barrier could be used for successful spawning. The entire length of the stream from saltwater to the end of the main valley, except for the lake, would probably be used.

upper system. Pink salmon in lake and feeder stream systems are not able to return as large a crop of fry to salt water as in lower systems. If pinks were to share a large portion of the upper spawning grounds with coho, a considerable part of the escapement might be, in effect, wasted.

Possible Sources of Error

The sample of 16 points is smaller than what would have been preferable with more time. However, dividing the stream into more homogeneous stretches helped concentrate the sample where it was most needed and helped make the best use of the information gathered.

The two points on stretch 1 appear to be insufficient to get a good idea of the true nature of the gravel. At least one more point should have been taken there. The treatment of these plotted points on the graph was influenced by personal judgement.

While useful gravels were found in both deep and shallow water, no gravel collections could be made in water over about 15 inches. I was forced to move the sampling point from the planned location to the nearest shallower spot in some cases. This, on the average, meant a move to swifter waters and may have resulted in a somewhat lowered percent of fines.

Errors inherent in the sampling device have not been considered. However, it is felt that in extremely swift water, such as was found in places in stretches 3 and 4, there may have been a slight loss of fines. In very fast water, samples could not be as deep since the water would splash over the top of the sampler and stir up and carry away material in it if it got too low. It was also hard to stand and manuver the rig as even and steady in fast water as in a gentler flow. No cloudiness downstream of the sampler was ever noticed, however.

Large rock made it hard to push the rig down smoothly and it would sometimes teater. A neat round hole was impossible in large gravel and swift water.

All these factors seem to tend toward a reduction in percent of fines. The results may be somewhat over optimistic but it is felt that they give a pretty good idea of spawning ground that could be opened.

The cooperation of the Alaska Department of Fish and Game and of the Bureau of Commercial Fisheries is much appreciated.

Submitted by _____ _____
Forester Date

Approved by _____ _____
District Ranger Date

Size of Bottom Materials (Actual volumes)

Stream: Marguerite Creek
Sampling area:
Random set:

Date: 2/4/64
Core size

Volume (in ml.) of solids retained by sieves having square mesh openings (in mm.)											Total volume of sample
50.8	25.4	12.7	6.35	3.327	1.651	.833	.417	.208	.104	Silt	
0	328	290	260	168	154	95	54	50	22	30	1452
360	209	294	302	151	48	10	10	9	9	2	1404
1446	301	303	212	101	75	10	9	9	9	14	2489
298	219	221	197	139	72	49	11	9	7	7	1179
500	584	212	176	115	214	188	103	94	77	91	2359
488	595	435	189	112	100	53	10	10	32	52	2076

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Pink and Chum Investigations